

ABSTRACT OF THE DISCLOSURE

A trench capacitor comprises a semiconductor substrate, a trench, formed in the semiconductor substrate, having upper and lower portions, a first
5 doped polysilicon layer filled in the lower portion through a first dielectric film and doped with a first impurity having a first conductivity type, at least a second doped polysilicon layer filled in the upper
portion through a second dielectric film and doped with
10 a second impurity different from the first impurity, the second impurity having the first conductivity type, and a buried strap layer provided on the second doped polysilicon layer and composed of the first doped polysilicon layer.